Scope of Services
Phase 1: Data Collection/Strategy Development
Economic Analysis of the Delaware Bay Shoreline Adaptation Alternatives
Task Order No. 1 –Preliminary Data Collection/Strategy Development
January 13, 2011
Johnson, Mirmiran & Thompson, Inc.

BACKGROUND

Johnson, Mirmiran & Thompson, Inc. (JMT) has prepared Task Order No. 1 – Phase I: Data Collection/Strategy Development for the *Economic Analysis of the Delaware Bay Shoreline Adaptation Alternatives* project sponsored by the Delaware Department of Natural Resources and Environmental Control (DNREC). The purpose of Phase I is to obtain and assess data that is available for the project, develop some preliminary data necessary to make initial decisions on project approach, and, based on the data, develop a strategy and approach that will accomplish DNREC's goals for the project. It is anticipated that Phase II and subsequent phases and related task orders will be based on the findings of Phase I. Phase I assumes that the *Preliminary General Scope of Services* prepared by JMT and reviewed by DNREC dated January 13, 2011 comprises the main tasks to be accomplished for the project.

Attached is a figure depicting the location of the seven communities to be evaluated for this initiative.

SCOPE OF SERVICES

The JMT team will complete the following scope of services as part of this task order for Phase 1.

I. Data Collection

A primary focus for this task is to collect and review data to determine a strategy for the economic analyses. Data will be collected through a variety of public entities/agencies, including but not limited to:

- DNREC divisions
- Delaware State Planning Office
- Delaware Department of Transportation (DelDOT)
- Kent County
- Sussex County
- Kent Conservation District
- Sussex Conservation District
- US Army Corps of Engineers (USACE) Philadelphia District
- US Environmental Protection Agency (USEPA)
- US Fish and Wildlife Service (USFWS)
- Natural Resources Conservation (NRCS)
- US Geological Survey (USGS)

- National Oceanic and Atmospheric Administration (NOAA)
- Federal Emergency Management Agency (FEMA)
- University of Delaware (UD)
- Non-profits such as Partnership for the Delaware Estuary (PDE)
- Delaware River Basin Commission

The following types of data will be collected.

a. Existing Studies/Reports
   JMT will collect studies and reports regarding hazard information for the communities, ecosystems in the study area, population and land use, tourism, recreation, property valuation, etc.
b. Planning documents
   Land use plans, zoning ordinances, master plans for the primary communities will be obtained. State and County All Hazard Plans and related hazard planning documents will be collected from the State of Delaware.
c. Mapping
   Mapping will be collected in GIS compatible format where possible depicting infrastructure, natural features, structures, etc. As-built surveys available from DelDOT will be pursued. Aerial photography will also be an important data set for the project.
d. Topography
   Existing topographic data/surveys for the communities will be obtained, with a focus on recent LiDAR information.
e. Structures data
   Information about structure size, type, value, etc. will be collected. Insurance claims information and elevation certificates available for each of the communities will be collected.
f. Hazard Mapping
   Coastal hazard mapping will be collected in digital format from existing resources.
g. Ecosystem/Natural resources
   Mapping and studies identifying natural resources in the study area will be collected.
h. Modeling – hazards
   Existing models developed for coastal hazards in Delaware will be collected.

JMT will prepare a list of information desired and provide to DNREC to determine what data DNREC can provide.

II. Data Review/Inventory

The data collected in task 1 will be reviewed, assessed for integrity and appropriate use for the study, and inventoried.

a. Prepare Inventory

JMT will prepare an inventory/catalogue of the available data noting source, format, date, and other qualifiers.

b. Summarize data
The data sets will be summarized with an emphasis on potential use for the study

c. Data Gap analysis.
Upon completion of the data collection a data gap analysis will be performed to identify data sets that are lacking but necessary to complete the proposed studies.

d. Recommended data development
JMT will prepare a memorandum summarizing recommendations for which existing data sets would be appropriate for the analysis and where new data sets should be collected.

III. Study Area Delineation – Base Map

a. Study Area Delineation
JMT will prepare a delineation of the study area for each community depicting the geographic boundaries and key features. This study area map will be used as the basis for estimating and planning future phases of the project and presentation in team meetings for strategy development. The study area map will be updated based on data collected in the field as part of this task.

b. Base Map
JMT will prepare a GIS base map using publicly available aerial photography and GIS data layers. The base map will include property boundaries, utilities, natural resources, floodplains, and other pertinent data to be presented graphically. The base map will be formatted to permit future data layers to be added as the project progresses. The base map will be used in team meetings to develop the project strategy.

IV. Site Reconnaissance

JMT team members will conduct a “windshield” tour of the communities and general surroundings to confirm key information depicted on the base map and study area map. Photographs will be taken documenting typical conditions in each community. The study area map and base map will be amended if necessary based on the findings of the site reconnaissance.

V. Shoreline Adaptation Alternatives Identification

a. Preliminary scenarios list
JMT will prepare a list/description with a description of pros/cons of potential shoreline adaptation scenarios/alternatives for each community. The list will include at a minimum the no-action alternative, the PBSJ proposed beach nourishment alternatives, structural alternatives, and planned retreat.

b. Meeting

DNREC/JMT will meet to discuss the scenarios and concur on the selected scenarios for evaluation. It is anticipated that a meeting to discuss multiple results from the assessment will be scheduled.

c. Memorandum
JMT will prepare a list/description in memo format describing the list of potential alternatives, the selected alternatives for analysis and the rationale for selection.

VI. Coastal Hazard Modeling

a. Alternatives Brief
JMT will prepare a brief describing the current coastal hazard mapping/data and provide a list of pros/cons for using the existing information versus developing new models depicting the hazards. Options include using existing models, existing models with updated base mapping, and new models.

b. Meeting
Meet with DNREC to discuss options and approve selected option.

c. Memorandum
JMT will prepare a memorandum summarizing the rationale for the preferred approach to hazard mapping data.

VII. Strategy Meeting

JMT will meet with DNREC to review the results of tasks I – VI and work collaboratively to develop a strategy for the necessary economic analyses. JMT will prepare presentation materials for the meeting and document the meeting. The JMT Project Director and Baker Project manager will participate in the meeting. DNREC's key staff will also participate. As part of this meeting the team will discuss an outreach plan. JMT will summarize the outreach plan as part of the meeting documentation. As part of this meeting, the team will discuss a detailed schedule with a listing of key milestones for use in tracking the projects.

VIII. Phase II Approach/Scope Development

a. Potential Options/Approaches
JMT will prepare a draft of potential options/approaches for future phases with estimated planning level budgets for DNREC review and comment.

b. Draft Approach/Strategy – Recommended
JMT will prepare a draft detailed approach/strategy for the recommended option/alternative identified above with detailed budget estimates.

c. Phase II Scope of Services
JMT will prepare a scope of services for the recommended actions.

IX. Optional:

a. Strategy Development Charette

As proposed in tasks I –VIII, JMT staff will meet with DNREC to review the results of the data collection/assessment tasks and collaborate with DNREC to develop a strategy. For this optional task we propose a charette type forum that includes representatives from DNREC and the JMT team of experts to present ideas on the strategy for development. The purpose of this charette is to obtain insights and potentially "buy-in" from the various DNREC departments into the strategy that will be proposed. This format is anticipated to provide increased credibility and internal transparency into the process.

b. Task Force Meeting Brief and Attendance
The JMT team believes strongly that early coordination with and collaboration with the primary stakeholders is important. We propose a similar charette/presentation with the stakeholders to present the strategy and rationale for the strategy. Experts from DNREC and the JMT team would attend. The intent is to obtain early consensus on the approach from all interested parties before significant effort and time is spent on the project implementation. We believe that many efforts/tasks can be initiated concurrently with this outreach without affecting the overall project schedule.

Deliverables:

- Data Inventory/Catalogue
- Data Gap Assessment
- Opinion memo on coastal hazard mapping adequacy
- Outreach Plan
- Project Schedule
- List of Scenarios/Alternatives to be Evaluated for each community
- Study Area maps
- GIS/Data Base Framework for data management/presentation
- GIS mapping of each community including Natural Resource features, floodplains, road network, structures – study area delineations
- Scope of Services for selected phases (Phase 1A-1D)
- Meeting minutes and memoranda
- Photographs of the communities
- Strategy for Economic Analyses